

SITE ID: NASA-WSTF LOCATION ID: 600-E (Westbay)

SITE COORDINATES (ft.):

N: 224792.43 E: 413630. 40

GROUND ELEVATION (ft. MSL): 4746.17

STATE: New Mexico COUNTY: Dona Aña

DRILLING METHOD: Mud Rotary/ Air-Foam Hammer

DRILLING CONTR.: Stewart Brothers Drilling Co.

DATE STARTED/COMPLETED: 09/23/97 - 10/10/97

FIELD REP.: Giles/Pearson/Egan/Canavan

COMMENTS: Lithlog compiled by M. Canavan. Drilled Mud

SW 14 NW 14 NW 14 SW 14 S 2 T 21S R 3E

Air-foam hamme
Top of Andesite 1

rotary, 9 7/8" hole, 0'-151'. Installed 6" surface casing to 150'. Air-foam hammer, 4 ½" hole, 151'-701' (TD). DTW = 273.5' Top of Andesite Bedrock at 150'.

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LOCATION	DES	CRI	PTI	ON:-										
Depth				,	Visu	al %	6			Lith	Drilling Time Scale: ft/hr	and Ir	e Type nterval	Lithologic Description
10	+	+	+	+	+	v	V	V		<i>II</i>	21	Grab C even 0'-7	y 10'	O' - 140': ALLUVIUM (Santa Fe Group): Unit is comprised of silt- to gravel-sized (up to 2.0 cm) clasts with clay intervals present where noted. Sample color ranges from pale yellowish brown (10 YR 6/2) to medium gray (N5) with individual clast color being highly variable. Clasts/cuttings may be well rounded to angular and sorting is poor to moderate. Caliche coating on clasts is prevalent from 0-20', 70'-80', and
20	+	+	+	+	v	V	v	V	//	:	46			100'-120'. 130'-140' sample shows evidence of localized cementation of angular lithic clasts. The Santa Fe Group Alluvium is a consolidated to unconsolidated, moderately to poorly sorted, polygenetic pebble to boulder conglomerate. Sedimentary lithologies represented are highly variable and in-
30	+	+	+	+	<b>v</b>	.v	v	v		<i>II</i>	6			clude medium light gray (N6) to medium dark gray (N3) micritic to crystalline and slightly fossiliferous limestone; pale olive (10 Y 6/2) to red laminated siltstones; fine-grained quartz and lithic arenites, cherts, and clays. Igneous lithologies are equally variable and include fine- to coarse-grained granites, very pale
40	+	+	+	V	v	v	//	::		<u>=</u>	20			orange (10 YR ¾) to dark reddish brown (10 R ¾) rhyolite porphyries; and several miscellaneous felsic igneous rock types. Also present are a variety of quartzites, quartz, feldspar, and biotites.
50	v	V	v	V	+	+	+	//	::	=	75			0'-30' Birnodal samples (2-5 mm and 0.75-1.5 cm)  30'-70' Clay percentage increases. Clay is light brown (5 YR 6/4) to moderate brown (5 YR 4/4)
60	v	V	ν.	+	+	+	//	::		=	75			<b>30'-40'</b> Finer grained sample. Silt to gravel ( ≈1.0 cm) size grains. Subangular to rounded.
70	=	=	=	=	+	+	+	v	v	<i>II</i>	13			
80	+	+	+	+	V	٧	V .	//	::		40			
90	+	+	+	+	v	V	v	=	11	//	120			
100	+	+	+	=	=	=	v	v	v	// //	25			100'-130' 5% Clay
	$\vdash$	$\vdash$	$\vdash$	$\vdash$			$\vdash$	Н	$\dashv$					

Depth				١	/isu	a! %				Lith	Drilling Time Scale: ft/hr	Sample Type and Interval	Lithologic Description
110	+	+	+	+	V	٧	٧	//	::		120	Grab Cuttings every 10'	
										_		0'-701'	
120	-	+	+	+	v	v	v	//	::		26		
120	_	Ė	+	t	Ľ	V	Ľ	"	<u> </u>		20		
130	+	+	+	+	v	V	v	//	::		75		130'-140' Calcareous cementation in 10% of cuttings. Angular
					_	_	-						to subangular.
						-	Е	<u> </u>	П	_			
140	+	+	+	ν	ν	ν	//	::		=	11		140'-150' <u>VOLCANIC RICH ALLUVIUM</u> : Andesitic fine sand and gravel.
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150	V	V	٧	٧	٧	V	V	V	V	+	24		140'-701' ANDESITE (Orejon): Blackish red (5 R 2/2) to pale purple (5 RP 6/2) with altered
								-	$\vdash$				zones of pale green (10 G 6/2) to grayish green (5 G 5/2) and iron oxidized clasts and individual mafic minerals and lithic
160	V	v	v	ν.	v	ν	v	v	v	=	43		fragments of moderate reddish orange (10 R 6/6) to moderate reddish brown (10 R 4/6). Formation ranges from a micropor-
	Ė	Ė	Ė	Ė	Ė	Ė	Ė	Ė	İ	-	.9		phyritic andesite through a well-sorted volcanic sandstone, semi- to unconsolidated volcaniclastic sand, to a volcanic breccia com-
			_		_	ļ.,		<u> </u>					prised of a variety of andesitic to dacitic rock types. Andesitic
170	v	v	ν	v	v	v	ν	v	v	= 20.44	26		aphanitic groundmass comprises 10% - 60% of a unit and may be difficult to discern in clastic zones. Plagioclase and hom-
	-	<del> </del>	H		_	-		L.					blende phenocrysts are ubiquitous but range from 10% - 40% of composition and may be anhedral to euhedral. Flow alignment
													is evident in some units. Volcaniclastic units include angular to rounded quartz feldspar and lithic fragments and andesite xeno-
180	V	ν	v	v	v	٧	v	٧		=	40		liths. 150'-170' Highly altered andesite Fine sand and gravel.
													Rounded clasts are moderately to very friable and partially altered to clay. Color is grayish pink (5 R 8/2).
100										_	00		
190	Ľ	٧	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	٧	V	٧	V	V	V	/	26		170'-180' Trace white fracture filling calcite. Patches of clay alteration on subangular cuttings.
													180'-220' Grayish red (5 R 4/2) to grayish red purple (5 RP 4/2)
200	V	v	v	v	V	v	v	v	ν	<b>\\</b>	75		and grayish pink (5 R 8/2) cuttings show clay alteration on surfaces that increases with depth, giving them a dusty appearance.
	_			_			_						Cuttings are subangular to subrounded and sample is alluvial in appearance. Friable cuttings probably rounded easily. Andesite
													(possibly a litharenite mudflow) is finely porphyritic with 10-20% plagioclase and 10% hornblende phenocrysts altering to limonite.
210	v	٧	v	V	v	V	٧	ν	٧	<u>/</u>	30		plagiociase and 10% nomblende phenodysts alterning to innomite.
220	V	V	v	V	V	V	v	V	V	/_	30		220'-300' Finely porphyritic andesite, 30%-40% phenocrysts with some groundmass. Mafic phenocrysts showing rims or
	Ē												complete alteration to limonite. Samples somewhat friable.  Trace calcite fracture fill.
230	v	v	v	v	v	v	v	v	v		60		, and the second
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240	ν	v	v	ν	v	v	v	v	V	/	30		
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Depth				١	/isu	al%	,				Lith	Drilling Time Scale: ft/hr	Sample Type and Interval	Lithologic Description
250	V	V	<u>v</u>	V.	V	v	V	V	V	V	i-ya	43	Grab Cuttings every 10' 0'-701'	
260	v	V	٧	V	V	V	V	V	V	\ \ \		25		
270	v	V	V	v	v	v	V	V	V	=		46		
280	v	V	V	ý	v	V	v	v	v	V		33		
290	v	v	v	v	v	V	V	V	ν	V		43		
300	v	V	v	v	v	v	v	=	=	=		29		300'-350' Subtle color change to dusky blue (5 PB 3/2) to very dusky red purple (5 RP 2/2) indicating less alteration. Irregular anhedral quartz phenocrysts or vug fill. Dense aphanitic micro-
310	v	v	v	V	v	v	V	=	=	=		10		porphyry. 310'-320' Altered zone. 30% clay.
320	v	v	V	٧	V	v	V	V	V	> 		30		
330	v	v	v	v	V	V	v	V	v	V	I.	14		
340	٧	٧	٧	٧	V	V	.V.	V	٧	<b>V</b>		40		
350	V	v	V	v	V	v	V	V	v 	V		22		<b>350'-400'</b> Andesite porphyry. Up to 40%-50% anhedral to euhedral white feldspar phenocrysts with varying stages of alteration of groundmass and mafic phenocrysts. Healed minute
360	V	V	v	v	v	V	V	v	V	V		24		fractures. Dense and angular cuttings.  360' 5% calcite fracture fill.
370	٧	V	ν	V	٧	V	V	V	v	V		370'-700' not available		
380	٧	V	V	V	v	٧	V	v	V	8	energy.			
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Depth				,	√isu	al %	2				Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
390	٧	٧	٧	ν	V	V	V	V	٧	٧			Grab Cuttings every 10'	
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430	V	V	V	V	V	٧	٧	٧	V					
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440	٧	٧	V	v	V	v	y	v	V	٧				
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500	٧	V	V	٧	٧	٧	v	٧	٧	٧				
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510	v	V	V	٧	v	v	v	٧	v	V				
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Depth					. —	ai %		,			Lith	Scale. IIIII		Lithologic Description
530	<u>v</u> _	V_	V	V_	V	٧	v	V	V	V			Grab Cuttings	
					-	<u> </u>	╁	-	┝	<del> </del>			every 10' 0'-700'	
		Ι.											0,700	
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540	٧	٧	٧	٧	٧	٧	٧	٧	٧	٧				
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560	V	V	V	٧	<u>v</u>	V	٧	٧.	V	٧				
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570	v	ν	٧	ν	v	ν	v	v	٧	٧				570'-600' Andesite lahar contains quartz feldspar and lithic
														clasts.
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500														
580	٧	٧	٧	٧	٧	V	٧	V	٧	٧				
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600	v	v	v	٧	v	v	v	v	v	v				600'-620' Andesite porphyry. Microporphyritic andesite with
333	Ė	÷	Ť	•		Ė	Ė	Ė	Ė	H				dense groundmass. Plagioclase and mafic phenocrysts are sub
								_						to anhedral and <<1.0 mm long. Disseminated mafics and void
														filling? or plagioclase?
										Ш				
610	٧	V	٧	V	٧	<u>v</u> .	V.	V	V	V				
										Н				•
		_												
620	v	٧	٧	٧	٧	v	v	v	V	٧				620'-700' Andesitic Lahar. Andesitic groundmass contains
														sand (quartz, feldspars, lithic fragments) and xenoliths of epidot-
	_													ized microporphyritic andesite. Texture is grainy and flow align-
	_						_			Н				ment is evident in some cuttings. White plagioclase pheno-
630	<u></u>	٧	v	٧	V	٧	v	v	v	v				crysts are sub to euhedral and range from <<1.0 mm to 2 mm (10%-40% of rock). An to subhedral hornblende comprises up
000	<del>  ·</del> -		<del>-</del> -	Ť	_	_	v	Ľ	ř	Ť				to 15% of rock. Samples are medium gray (N5) to very dusky
														purple (5 P 2/2) and cuttings are silt to 0.5 mm in size. Cuttings
														are very friable as rock is semi to unconsolidated. Xenoliths are
	Ш									Ш				rounded and up to 2 mm in cuttings and contacts with ground-
640	٧	٧	٧	٧	<	٧	٧	٧	<	٧				mass are sharp.
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		-	-	-	-	-	_		_				every 10' 0'-701'	
680	F	v	V	v	v	v	v	v	V	v				
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690	v	v	v	v	v	v	v	v	٧	ν				
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700	V	V	V	V	٧	V	٧	٧	V	V				701' Total depth of borehole.
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720		┢												
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